Revision of "Peak" Measurement

Issue: 47 C.F.R. § 24.232 requires transmitter power output and base station e.i.r.p. to be measured on a "peak" basis.

- The Commission's current practice is to allow either peak *or* average measurements, although its rule permits only peak measurements. Therefore, ***the rule lacks clear and certain guidelines on how to comply with the Commission's measurement requirement***; and
- Peak measurements do not provide accurate and relevant information for technologies with non-constant envelope signals, such as W-CDMA and CDMA 2000, while average measurements do. Since peak measurements are accurate for some technologies, but not for others, ***the rule's peak measurement requirement is not technology-neutral***.

Resolution: The Commission should either:[1]

- ***Eliminate all references to peak measurements*** of transmitter output power and base station e.i.r.p., permitting measurements on either an average or peak basis, without restriction; or
- Retain all references to peak base station e.i.r.p. and transmitter output power measurements and ***add "average" as an alternative measurement***, including both in the text of the rule.

Revision of "Per-Channel" E.I.R.P. Limit

Issue: 47 C.F.R. § 24.232 limits base station e.i.r.p. by channel. Commenters have proposed various revisions to this limit, including applying the limit on either a per-carrier or power spectral density per-MHz basis. However:

- A power spectral density e.i.r.p. limit is biased toward wideband technologies, since, even when operating at the same power, narrowband technologies have a higher power density than wideband technologies. Therefore, ***a power spectral density limit discriminates against the higher density of narrowband technologies' power***; and
- A power spectral density per-MHz limit allows a wideband carrier to multiply its limit by the number of MHz bands on which it operates, but limits a narrowband carrier, who operates on a fraction of one MHz band, to only a fraction of the same limit. Clearly, and as noted by Motorola, ***a power spectral density limit imposes overly strict limits on and negatively impacts both current and future narrowband technologies.***

Resolution: The Commission should:

- Apply Motorola's proposed two-tier structure, using ***a per-carrier limit for carrier bandwidths less than 1 MHz and a power spectral density per-MHz limit for carrier bandwidths 1 MHz and greater***.

Revision of E.I.R.P. and Transmitter Output Power Limits

Issue: 47 C.F.R. § 24.232 limits base station e.i.r.p. to 1640 watts and transmitter output power to 100 watts.

- When the Commission adopted these limits a decade ago, it intended to limit output power to prevent output power beyond receivers' capacity to respond. Due to protections in Commission rules, advancements in technology, and economic disincentives to deploy higher output power than necessary, ***output power limits are unnecessary and superfluous***;
- Improved technology now allows operators to effectively use higher power to provide greater range, extend coverage, and improve quality of service, particularly in rural areas – ***the current e.i.r.p. limit restricts expansion of quality rural service***; and
- Since the Commission adopted the 1640 watt base station and 100 watt transmitter output power limits ten years ago, technology has developed significantly – ***current transmitter output power and base station e.i.r.p. limits stifle further innovation***.

Resolution: The Commission should:

- Based on Qualcomm's proposal, ***raise base station e.i.r.p. limit to 6560 watts***, or four times the present limit, applied on a per-carrier/power spectral density as noted above; and
- ***Eliminate the 100 watt transmitter limit***, as supported by the majority of commenters.

[1] The Commission should mirror these changes in its Part 27 AWS technical rules, located at 47 C.F.R. § 27.50(d)(1).